SECTION SEVEN

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# THE RACE OF THE NATIONS TO BE "READY"

# Deadly War Engines Developed Since the Armistice

## New Weapons of United States, Britain, France and Germany Dwarf Marvels of World Conflict---Supercannon, Gigantic Aerial Bombs and Torpedoes, Armored Submarines, Deadlier Gases, Other Inventions Bring Instant Obliteration of Whole Cities, Armies and Fleets Into Range of Possibilities

*THE race of the nations to be "ready" still goes on. When the war ceased, on November 11, 1918, the inventive genius of the world was probably keyed to a higher pitch than ever before in history—with instruments of death and destruction as its inspiration.*

*And in the two years and more since the armistice there has been little lessening of the momentum. THE NEW YORK HERALD recently instructed its correspondents in Berlin, Paris, London and Washington to learn as much as possible concerning what had been "left over" after the war and what had been developed in the way of engines of war, looking to "the next war," since the armistice.*

*What follows tells of the ceaseless efforts to be "ready"—and it will serve to stimulate the imagination as to what another war would mean.*

*Special Correspondence to* THE NEW YORK HERALD.



New York Herald Bureau, Washington, D. C., April 16.

AMERICAN inventive genius, stimulated to tremendous efforts by the nation's participation in the world war, has continued since the armistice with no less zeal in the production of new and more highly perfected tools of warfare. Some of these new inventions are secret, but in the main American activities along lines of military progress are open to the world. In fact, many of them are not susceptible of concealment, while in other instances, notably in the case of poison gases, it is the Government's policy to make its progress known.

War activities and the momentum from them that is still in force have put the United States in a much better position so far as military equipment is concerned than ever before in its history.

Probably one of the most valuable heritages of the war is the realization of war conditions which found lodgment in the American mind, giving a better appreciation of the value of national preparedness. This realization cannot be transformed into a list of guns and other war essentials, but it represents the potential possession of these things. It means that the United States proposes to place itself in a position where it can change to a war basis if necessary within a minimum space of time.

One of the great accomplishments of the war was the success of the medical corps of the different armies in practically abolishing typhoid fever. To-day the Government is prepared to announce that it has yellow fever under control. The yellow fever germ has been discovered by a Japanese, Dr. Noguchi of the Rockefeller Institute for Medical Research, and the serum for its elimination has been prepared. If the army of the United States should ever be compelled to operate in tropical countries, yellow fever will no longer offer any terrors for it.

### *Great Strides in Developing Big Guns and Poison Gas*

In a general way the greatest activity of the military branches of the Government has been devoted to developing the supergun and poison gas. Civilization shrinks at the use of gas as a weapon, but it apparently has come to stay.

Frankness compels to credit the Germans with the discovery of the most advanced possibilities of modern artillery, while to them also goes the credit or discredit of being the first to use poison gas.

Immediately after the war broke out it became clear that Germany had developed a form of heavy artillery which made modern fortifications useless. Working upon this idea the army and navy have been developing the big gun until it has approached a degree of perfection which still further revolutionizes land warfare and will make naval warfare of the future entirely different from what the world has seen.

The battle of Jutland was fought with the opposing vessels at an average distance of from seven to eight miles apart. American navy experts believe naval battles of the future will be fought at distances approximating twenty-five miles and they are preparing to equip naval vessels with guns that will be effective at this distance. The sixteen inch gun is taking the place of the fourteen inch gun.

The close of the war found the United States well advanced in navy equipment. While construction of heavy vessels was stopped by the necessity of concentrating on merchant vessels, American effort concentrated on the building of destroyers, with the result that this country now has a formidable fleet of these vessels. The completion of the navy programme which is part of the aftermath of the war will find the American navy second to none on paper, and possibly supreme, because of the modern ideas that have been incorporated into the recent construction.

During the twelve months ending October 1, 1920, this Government completed 1 battleship, the Tennessee; 84 destroyers, 12 submarines, 8 Eagle boats, 1 fuel ship, 1 ammunition ship, 1 gunboat, 6 mine sweepers, 11 tugs. This left under construction, October 1, 1920, 11 battleships, 6 battle cruisers, 10 scout cruisers, 1 gunboat, 8 auxiliary vessels, including 2 ordered during the year; 52 destroyers, 49 submarines, including the 3 fleet submarines ordered in March; and 3 fleet tugs. With the exception of the battleship California, launched November 20, 1919, and due for completion early next year; the destroyers, 20 of the submarines and the 3 fleet tugs, the vessels now under construction all belong to the three year programme.

The foregoing paragraph, taken from the report of the Secretary of the Navy for 1920, shows the war development of the navy and is properly included in the war machinery resulting from the war and now on hand. The same report pointed out that sixteen capital ships were then under construction.

In the development of naval aircraft, the Navy Department is asking for additional appropriations and, using war experience to practical purpose, has already transformed the collier Jupiter into the airplane carrier Langley. It is proposed to build additional vessels of this kind and the navy has in mind construction of capital ships so each vessel may carry its own complement of aircraft which will base on the vessel itself.

Aircraft development is in a state of uncertainly just now, but the Government has a huge supply of Liberty motors, left over from the war, which have been highly perfected. The country also has manufacturing plants which are turning out commercial aircraft and which could be used on a moment's notice for war purposes.

Both Navy and War Departments are experimenting in the manufacture of new bombing devices, and the manufacture of a huge bomb, weighing 3,000 pounds, used with the highest explosive, is under consideration.

In the development of artillery the War and Navy Departments have in mind three prime factors—rapidity of fire, weight and range of projectile, and mobility.

The horse is rapidly being eliminated for the transport of land artillery. The gas driven motor is taking its place. Interesting developments have taken place along this line. The army has developed a form of tractor which can be used with automobile wheels on good roads, and t ansformed into a caterpillar tractor when the roads end. The army has also developed a heavy gun which can be moved on rails and can be pointed in any direction.

Volunteer organizations also have undertaken to establish a liaison with manufacturing establishments in all sections of the country so their factories may be equipped in such a manner that they may be transformed quickly into ordnance plants. Colleges are being encouraged to establish technical courses to teach subjects essential to the manufacture and operation of war machinery.

Despite all it has sold, the War Department is still in possession of an enormous quantity of searchlights and fittings, antiaircraft guns, equipment and supplies for the signal corps and other material. The inventive genius of both army and navy is being devoted to developing devices which will facilitate range finding, improve radio communication, make the operation as well as the detection of submarines more scientifically accurate—in fact, the aim in profit to the utmost from all the lessons taught by the war.

In this country and in Great Britain especial attention since the war has been given to facilities for manufacturing the deadly gas known as diphenychlorasine. This is a development of the sneezing gas, the most dangerous gas used by the Germans in the war. It is a smoke gas and its present development makes the old time gas mask ineffectual. It is susceptible of vaporization by heat. It remains solid, but the particles become so small they will penetrate almost any gas mask known. Among other things, it is described as "fool proof" and is easy to handle. It can be mixed with smoke, making the smoke toxic, thereby increasing its effectiveness, its volume, its penetrating power and its deceptiveness.

For the manufacture of diphenychlorasine, the United States has an immense plant at Edgewood, near Baltimore, where there is now stored 2,000 tons of this deadly gas, 200 tons of mustard gas and quantities of other gases.

The plant is so equipped that with twenty-four hours' notice it can turn out a minimum of 200 tons of various gases in a day.

At Edgewood Arsenal there are stored in addition to the finished product approximately 10,000,000 pounds of different substances of a toxic or otherwise dangerous nature. There are also about 288,500 gas filled projectiles stored at the arsenal. The patrol of this great storehouse of deadly materials is one of the most hazardous tasks of the army to-day. Other important factors at Edgewood Arsenal are a gas mask factory and two shell filling plants, one a 75 mm. and the other a 115 mm. plant. The gas mask programme calls for the manufacture of 120,000 masks during the coming year and for the manufacture of 300,000 for the year following.

Large quantities of guns, howitzers, ammunition and other artillery material are on hand, left over from the world war. "The country thus for the first time in half a century has on hand sufficient artillery to equip a large army," said Major-General William J. Snow, Chief of Field Artillery. "Should war break out in the next few years we should be spared the spectacle of artillery drilling with wooden guns, homemade telephones, rope harness, and similar expedients which characterized the first year of the late war."

### *Aberdeen Proving Grounds Rank as Best in World*

The United States now has the most complete establishment in the world for the testing of war materials in the Aberdeen Proving Grounds of the Ordnance Department, according to Major-Gen. C. C. Williams, Chief of Ordnance. The Technical Staff of the Ordnance Department is now carrying out a programme to develop new artillery for the army, taking into account the lessons learned in the world war. This programme contemplates the design and manufacture, for experimental purposes, of divisional guns and howitzer, pack artillery, guns and howitzers of greater power, anti-aircraft artillery, infantry howitzer, trench artillery, self-propelled gun mounts, major calibre railway mounts, including equipment of 8-inch, 12-inch, 14-inch and 16-inch calibre, and artillery tractors. Liaison has been maintained with the Military Intelligence Division of the War Department General Staff by the Ordnance Department Technical Staff to follow the trend of ordnance development in other countries.

Purely inventive work carried on by the War Department includes the following important projects:

Centrifugal machine guns for use against airplanes. This gun is particularly adapted to combat airplanes due to the very great rapidity of fire which it may attain.

The Leon device for automatically controlling the depth of submergence of submarine mines.

Projectiles to be used with guns of various calibres for illuminating water areas.

The invention of John Hays Hammond, Jr., for radio control of submarine torpedoes, just accepted by the Government.

An important type of airplane recently developed by the Air Service is an armored ground attack three-seater triplane, mounting eight machine guns and a 37 millimeter cannon. The two Liberty 12 engines and the crew of this airplane will be protected by armor plate. Ten of these ships are now being built.

The Tank Corps has been incorporated under the infantry by the army reorganization act. Strides are being made by this branch in the development of tank warfare. A tank has been completed, according to Brig.-Gen. S. D. Rockenbach, chief of the Tank Corps, which "will revolutionize the ideas of tanks." Nothing, however, has yet been allowed to become public regarding this invention. The study and work of designing a suitable radio apparatus for installation in tanks has been carried on, and extended radio telephone conversation from tank to tank, back to headquarters, and with airplanes, has been carried on. All heavy tanks can carry the apparatus, and ten light tanks, with special turrets for it have been procured by the corps and forty more are under construction.

## AVAILABLE:

### United States.

**Radio control of submarine torpedoes.**

**Aerial torpedo regarded as one of the most important of the new factors in naval warfare.**

**Supergun for battleships and land fortifications, outranging by miles any heretofore in use.**

**Diphenychlorasine, a development of the sneezing gas used in the late war but far more deadly.**

**Masks and clothing impervious to the most deadly poison gases.**

**Airplane carriers to accompany the battle fleets.**

**Armored ground attack, three-seater triplanes, mounting eight machine guns and a 37 millimeter cannon.**

**Army tractor that can be used with automobile wheels on good roads and caterpillar machine on rough ground.**

**New tank, the details of which are kept secret.**

### Great Britain.

**Superairplanes, the "V" Handley Page type, 340 horse-power, cruising a radius of 3,000 miles, to carry bombs weighing 1,800 pounds each.**

**One-man tanks faster than any used in the war and supertanks of gigantic motive and gun power.**

**New poison gas, more deadly than that used in the late war and capable of being projected against the wind.**

**Electrical apparatus by which enemy ammunition dumps can be exploded from far behind the lines.**

**Huge sunken concrete towers for the support of submarine nets.**

**Floating magnets for diverting enemy submarines from their courses.**

### France.

**The turbo cannon, so named because, turbinelike, the projectile increases its speed after leaving the gun, giving it a longer range than the Big Bertha.**

**Submarine tanks, capable of crossing small rivers or lying submerged in flooded shell holes or ponds.**

**All metal airplane surpassing as a fighting machine any in the late war.**

### Germany.

**Armored submarine, which German experts say can withstand gun fire from destroyers and merchant ships and depth charges, and would have proved a decisive factor had it been perfected early in the war.**

## IN EMBRYO:

### United States.

**Railway guns surpassing those in the great war and a railway line for them to protect every mile of United States coast line.**

**Liquid poison three drops of which will kill on contact.**

**New devices calculated for use with bombs weighing 3,000 pounds each.**

**New illuminating projectile which would light up vast areas of water and disclose any submarines or mines.**

### Great Britain.

**A noiseless machine gun.**

**Plan for killing troops by electricity. Details are secret.**

**Submarine torpedo to carry a ton of TNT.**

**"Flying man-o'-war," a 30,000 horse-power superseaplane.**

**Flying ship of war, a 5,000 ton torpedo boat destroyer, with steel wings.**

**Bomb proof roofs for dockyards and piers.**

**Means of utilizing the deadly powers of the X-ray as a military weapon.**

### France.

**Huge rockets filled with explosives and oil to set fire to airplanes.**

**Shells propelled by a series of explosions, each giving fresh impetus and calculated to keep the projectile in flight for 100 miles.**

**Gigantic aerial bombs of sufficient power for airplanes equipped with them to destroy a whole city, army or fleet.**

# Great Britain Far Better Armed Than at Time of the Armistice

*Special Correspondence to* THE NEW YORK HERALD.



New York Herald Bureau, London, April 9.

WHEN the guns stopped on the morning of Nov. 11, 1918, Marshal Foch sat in his headquarters and wept. His tears won sympathy along the allied salient opposite Metz, where a score of American divisions were awaiting only the signal that would unleash them for their drive through Germany. And officials of the British War Office also understood.

At the hour of the armistice the British had three new engines of land warfare any one of which they thought then, and still think, would have made the Germans beg for mercy. They had airplanes to bomb Berlin, tanks to smash any front line the enemy ever had and poison gases that could be projected half a mile irrespective of the way of the wind.

These were developments of accepted tools of warfare. But there were many

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